

What is claimed is:

1. A method of processing text entered into a personal computing device with a pointing device, the method comprising:
 - (a) receiving a partial text entry;
 - (b) obtaining a dynamically generated list of completion candidates based on the partial text entry;
 - (c) displaying the list of completion candidates in a search list within a graphical user interface;
 - (d) receiving a user input signal associated with the pointing device;
 - (e) if the user input signal corresponds to a first type of user selection with the pointing device, deactivating the search list; and
 - (f) if the user input signal corresponds to a second type of user selection with the pointing device, replacing the partial text entry with a completion candidate from the search list.
2. The method of Claim 1, wherein if the user input signal corresponds to a third type of user selection with the pointing device, dynamically obtaining a refined list of completion candidates based on one of the completion candidates from the search list, displaying the refined list of completion candidates in the search list for further user selection; and monitoring for a further user input signal associated with the pointing device.
3. The method of Claim 1, wherein the user input signal corresponds to the first type of user selection with the pointing device when the pointing device is lifted up from an input-sensitive surface of the personal computing device without any significant movement once the search list is displayed.

4. The method of Claim 1, wherein the user input signal corresponds to the first type of user selection with the pointing device when a button on a mouse is selected.
5. The method of Claim 1, wherein the user input signal corresponds to the second type of user selection with the pointing device when a gesture is made with the pointing device towards a completion candidate in the search list to select the completion candidate and another user input signal is received indicating acceptance by the user of the completion candidate.
6. The method of Claim 1, wherein the user input signal corresponds to the second type of user selection with the pointing device when a gesture is made with the pointing device onto a completion candidate in the search list to select the completion candidate and the completion candidate remains selected for a predetermined time limit.
7. The method of Claim 1, wherein the user input signal corresponds to the second type of user selection with the pointing device when a gesture is made with the pointing device in a direction associated with a desired completion candidate without the pointing device necessarily moving towards or onto a portion of the graphical user interface where the completion candidate is displayed.
8. The method of Claim 1, wherein the user input signal corresponds to the second type of user selection with the pointing device when a motion is made with the pointing device in a particular direction associated with a desired completion candidate for at least a predetermined distance while the pointing device is in an active state and a further action is made with the pointing device to accept the desired completion candidate.
9. The method of Claim 1, wherein the user input signal corresponds to the second type of user selection with the pointing device when a

completion candidate in the search list is selected to replace the partial text entry.

10. The method of Claim 1, wherein the user input signal corresponds to the third type of user selection with the pointing device when a completion candidate in the search list remains selected for a predetermined time limit.
11. The method of Claim 1, wherein the user input signal corresponds to the third type of user selection with the pointing device when a gesture is made with the pointing device towards a completion candidate in the search list in order to select the completion candidate and the completion candidate remains selected for a predetermined time limit.
12. The method of Claim 1, wherein the user input signal corresponds to the third type of user selection with the pointing device when a predetermined character or key is selected.
13. The method of Claim 1, wherein the user input signal corresponds to the third type of user selection with the pointing device when a gesture is made with the pointing device in a particular direction for at least a predetermined minimum distance in order to select the completion candidate and the completion candidate remains selected for a predetermined time limit.
14. The method of Claim 1, further comprising preparing to receive a new partial text entry once the partial text entry is replaced with a completion candidate from the search list.
15. The method of Claim 1, further comprising receiving an end-of-entry signal and preparing to receive a new partial text entry once the end-of-entry signal is received.
16. The method of Claim 1, further comprising receiving an end-of-entry signal once a predetermined character or key is selected, and

preparing to receive a new partial text entry once the end-of-entry signal is received.

17. The method of Claim 1, further comprising preparing to receive a new partial text entry after the partial text entry is replaced with a completion candidate from the search list, but only if another user input signal is received that corresponds to an express user selection to terminate searching based on the partial text entry.
18. The method of Claim 1, further comprising displaying on the graphical user interface an indication of a currently active entry mode selected from at least one of a keyboard mode and a search mode.
19. The method of Claim 1, further comprising displaying on the graphical user interface a total number of completion candidates in a dictionary that begin with the partial text entry.
20. The method of Claim 1, wherein if the user input signal corresponds to a fourth type of user selection with the pointing device, changing selections within the search list.
21. The method of Claim 1, wherein if the user input signal corresponds to a fifth type of user selection with the pointing device, pausing without any further processing of the partial text entry or the search list until a new input signal identifying another type of user selection is received.
22. The method of Claim 1, wherein at least part of the partial text entry is received via a digital keyboard, the method further comprising:
 - (a) displaying the digital keyboard on a user interface of the personal computing device when a user is entering text a keystroke at a time;
 - (b) monitoring for user input;

- (c) if the user input corresponds to activating the search list, replacing the digital keyboard with the search list and waiting for further user input; and
- (d) if the user input corresponds to terminating use of the search list once activated, replacing the search list with the digital keyboard and waiting for further user input.

23. The method of Claim 1, wherein at least part of the partial text entry is received via a digital keyboard, the method further comprising displaying simultaneously both the digital keyboard and the search list.

24. The method of Claim 1, further comprising displaying the list of completion candidates in the search list as soon as they are retrieved by the candidate prediction system.

25. The method of Claim 1, wherein at least part of the partial text entry is received via a digital keyboard, the method further comprising swapping between displaying one digital keyboard layout and at least one other digital keyboard layout in response to user input.

26. The method of Claim 1, further comprising:

- (a) configuring a digital keyboard to include a plurality of characters assigned to predetermined locations within a layout for the digital keyboard according to a predetermined frequency distribution associated with the plurality of characters, the plurality of characters including less commonly used characters and more commonly used characters based on the predetermined frequency distribution; and

- (b) displaying the digital keyboard on a graphical user interface with the less commonly used characters displayed substantially further from a center of the digital keyboard than the more commonly used characters.

27. The method of Claim 22, wherein characters within the digital keyboard are displayed in rings with the characters in at least one ring organized alphabetically in a clockwise order.
28. The method of Claim 22, wherein characters within the digital keyboard are displayed in rings with the characters in at least one ring organized alphabetically in a counter-clockwise order.
29. The method of Claim 22, wherein characters within the digital keyboard are displayed in rings with about half of the characters in at least one ring organized alphabetically in a counter-clockwise order and the remaining characters in the at least one ring organized alphabetically in a clockwise order.
30. The method of Claim 1, wherein obtaining the dynamically generated list of completion candidates includes retrieving completion candidates from multiple dictionaries each having their own weight values for completion candidates and generating a final list of completion candidates for display in the search list based on the weight values associated with the completion candidates retrieved from the multiple dictionaries.
31. The method of Claim 1, wherein obtaining the dynamically generated list of completion candidates includes retrieving completion candidates from multiple dictionaries each having their own weight function for completion candidates and generating a final list of completion candidates for display in the search list based on weight values associated with the completion candidates retrieved from the multiple dictionaries and based on which of the dictionaries each particular completion candidate is retrieved from.
32. The method of Claim 1, the method further comprising displaying the search list in a fixed location on a graphical user interface.

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- 51.** The system of Claim 47, further comprising means for displaying on the graphical user interface an indication of a currently active entry mode selected from at least one of a keyboard mode and a search mode.

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the weight values associated with the completion candidates retrieved from the multiple dictionaries.

57. A method of user-based text entry into a personal computing device using a pointing device, the method comprising:

- 5 (a) monitoring a set of position coordinates for the pointing device relative to a user interface for the personal computing device; and
- 10 (b) displaying a digital keyboard on the user interface at a last known set of coordinates for the pointing device whenever the digital keyboard is activated for user input.

58. The method of Claim 57, further comprising:

- 15 (a) displaying the digital keyboard on the user interface of the personal computing device when a user is entering text a keystroke at a time;
- (b) obtaining a dynamically generated list of completion candidates based on a partial text entry entered via the digital keyboard;
- (c) monitoring for a change in the type of user input;
- 20 (d) if the type of user input corresponds to activating the list of completion candidates, replacing the digital keyboard with a list of completion candidates retrieved from a dictionary and waiting for further user input; and
- 25 (e) if the user input corresponds to terminating use of the list of completion candidates once activated, replacing the list of completion candidates with the digital keyboard and waiting for further user input.

59. The method of Claim 57, further comprising:

- (a) displaying the digital keyboard on the user interface of the personal computing device when a user is entering text a keystroke at a time;
- (b) obtaining a dynamically generated list of completion candidates from a dictionary based on a partial text entry entered via the digital keyboard; and
- (c) displaying simultaneously both the digital keyboard and the list of completion candidates.

60. The method of Claim 59, further comprising displaying the list of completion candidates as soon as the list of completion candidates is generated.

61. The method of Claim 57, further comprising swapping between displaying one digital keyboard layout for the digital keyboard and at least one other digital keyboard layout in response to user input.

62. The method of Claim 57, further comprising:

- (a) configuring the digital keyboard to include a plurality of characters assigned to predetermined locations within a layout for the digital keyboard according to a predetermined frequency distribution associated with the plurality of characters, the plurality of characters including less commonly characters used and more commonly used characters based on the predetermined frequency distribution; and
- (b) displaying the digital keyboard on the user interface with the less commonly used characters displayed substantially further from a center of the digital keyboard than the more commonly used characters.

66. The system of Claim 64, further comprising:

- (a) means for displaying the digital keyboard on the user interface of the personal computing device when a user is entering text a keystroke at a time;
- (b) means for obtaining a dynamically generated list of completion candidates from a based on a partial text entry entered via the digital keyboard; and
- (c) means for displaying simultaneously both the digital keyboard and the list of completion candidates.

67. The system of Claim 66, further comprising means for displaying the list of completion candidates as soon as the list of completion candidates is generated.

68. The system of Claim 64, further comprising means for swapping between displaying one digital keyboard layout for the digital keyboard and at least one other digital keyboard layout in response to user input.

69. The system of Claim 64, further comprising:

- (a) means for configuring the digital keyboard to include a plurality of characters assigned to predetermined locations within a layout for the digital keyboard according to a predetermined frequency distribution associated with the plurality of characters, the plurality of characters including less commonly characters used and more commonly used characters based on the predetermined frequency distribution; and
- (b) means for displaying the digital keyboard on the user interface with the less commonly used characters displayed substantially further from a center of the digital keyboard than the more commonly used characters.

70. A method of supporting text entry on a personal computing device with a digital keyboard and a search list that are displayed on a user interface, the method comprising:

(a) displaying the digital keyboard on the user interface when a user is entering text a keystroke at a time;

(b) monitoring a user input signal;

(c) if the user input signal corresponds to activating an automated search to obtain a list of completion candidates based on a partial text entry received by the personal computing device, replacing the digital keyboard with the search list containing the list of completion candidates and waiting for further user input; and

(d) if the user input signal corresponds to terminating an automated search, replacing the search list with the digital keyboard and waiting for further user input.

71. The method of Claim 70, wherein the user input signal corresponds to activating the automated search to obtain the list of completion candidates based on a partial text entry received by the personal computing device when a character in the digital keyboard remains selected by the pointing device for a predetermined time limit.

72. The method of Claim 70, wherein the user input signal corresponds to terminating the automated search when the pointing device is lifted up from an input-sensitive surface of the personal computing device without any significant movement once the search list is displayed.

73. The method of Claim 70, wherein the user input signal corresponds to terminating the automated search when a button on a mouse is selected.

5 74. The method of Claim 70, wherein the user input signal corresponds to terminating the automated search when a gesture is made with the pointing device towards a completion candidate in the search list to select the completion candidate and another user input signal is received indicating acceptance by the user of the completion candidate.

10 75. The method of Claim 70, wherein the user input signal corresponds to terminating the automated search when a gesture is made with the pointing device in a direction associated with a desired completion candidate and a further action is made with the pointing device indicating termination of the automated search.

15 76. The method of Claim 70, further comprising preparing to receive a new partial text entry once the partial text entry is replaced with a completion candidate from the search list.

20 77. The method of Claim 70, further comprising receiving an end-of-entry signal and preparing to receive a new partial text entry once the end-of-entry signal is received.

25 78. The method of Claim 70, further comprising preparing to receive a new partial text entry after the partial text entry is replaced with a completion candidate from the search list and once another user input signal is received that corresponds to an express user selection to terminate searching based on the partial text entry.

79. A computer-readable medium having stored instructions for use in the execution of the method of Claim 70.

80. A system for supporting text entry on a personal computing device with a digital keyboard and a search list that are displayed on a user interface, the system comprising:

- (a) means for displaying the digital keyboard on the user interface when a user is entering text a keystroke at a time;
- (b) means for monitoring a user input signal;
- (c) means for replacing the digital keyboard with the search list containing the list of completion candidates and waiting for further user input, if the user input signal corresponds to activating an automated search to obtain a list of completion candidates based on a partial text entry received by the personal computing device; and
- (d) means for replacing the search list with the digital keyboard and waiting for further user input if the user input signal corresponds to terminating an automated search.

81. A method of supporting text entry on a personal computing device by allowing a user to automatically search for and select completion candidates displayed in a search list based on a partial text entry, the method comprising:

- (a) receiving a user input signal;
- (b) if the user input signal corresponds to declining all completion candidates displayed in the search list, terminating automated searching with the search list with no consequence to the text being entered into the personal computing device;
- (c) if the user input signal corresponds to accepting a completion candidate from the search list to replace the partial text entry and to terminate automated searching, terminating the automated searching with the search list and modifying the partial text entry to become the accepted completion candidate; and

- (d) if the user input signal corresponds to selecting a completion candidate from the search list to initiate further searching, obtaining a new list of completion candidates based on the selected completion candidate and displaying the new list of completion candidates in the search list for further selection.

82. A method of supporting text entry on a personal computing device by allowing a user to automatically search for and select completion candidates displayed in a search list based on a partial text entry, the method comprising:

- (a) receiving a user input signal;
- (b) if the user input signal corresponds to declining all completion candidates displayed in the search list, terminating automated searching with the search list with no consequence to the text being entered into the personal computing device;
- (c) if the user input signal corresponds to accepting a completion candidate from the search list to replace the partial text entry and to terminate automated searching, terminating the automated searching with the search list and modifying the partial text entry to become the accepted completion candidate; and
- (d) if the user input signal corresponds to selecting a completion candidate from the search list to initiate further searching, obtaining a new list of completion candidates based on the selected completion candidate and displaying the new list of completion candidates in the search list for further selection.

83. A computer-readable medium for providing instructions for directing a processing unit to process text entered via a user interface with a pointing device, by:

- (a) receiving a partial text entry;
- (b) obtaining a dynamically generated list of completion candidates from a dictionary based on the partial text entry;
- (c) displaying the list of completion candidates in a search list within a graphical user interface;
- (d) receiving a user input signal associated with the pointing device;
- (e) if the user input signal corresponds to a first type of user selection with the pointing device, deactivating the search list;
- (f) if the user input signal corresponds to a second type of user selection with the pointing device, replacing the partial text entry with a completion candidate from the search list; and
- (g) if the user input signal corresponds to a third type of user selection with the pointing device, dynamically obtaining a refined list of completion candidates based on one of the completion candidates from the search list, displaying the refined list of completion candidates in the search list for further user selection, and monitoring for a further user input signal associated with the pointing device.

84. A system for computer-assisted text generation and entry, comprising:

- (a) an input interface for receiving user input signals based on actions with a pointing device;
- (b) a processing unit; and
- (c) a computer-readable medium containing computer-readable instructions for directing the processing unit to assist with text generation and entry based on user input received via the input interface with the pointing device, by:

- (i) receiving a partial text entry;
- (ii) obtaining a dynamically generated list of completion candidates based on the partial text entry;
- (iii) displaying the list of completion candidates in a search list on a display device;
- (iv) receiving a user input signal associated with the pointing device from the input interface;
- (v) if the user input signal corresponds to a first type of user selection with the pointing device, deactivating the search list; and
- (vi) if the user input signal corresponds to a second type of user selection with the pointing device, replacing the partial text entry with a completion candidate from the search list.

85. The system of Claim **84** wherein the computer-readable medium further comprises computer-readable instructions to dynamically obtain a refined list of completion candidates based on one of the completion candidates from the search list and to display a refined list of completion candidates in the search list for further user selection, provided the user input signal corresponds to a third type of user selection with the pointing device.

86. A method of rapidly entering text into a personal computing device with a pointing device, the method comprising:

- (a) generating a partial text entry containing one or more characters selected from a digital keyboard with a pointing device;

- (b) activating an interactive search list containing a list of all possible completion candidates found in a dictionary according to a predefined metric and based on the partial text entry;
- (c) if a completion candidate appears in the interactive search list matching a desired complete entry for the partial text entry, selecting by gesture the completion candidate and indicating completion of the partial text entry in the text; and
- (d) if a partially successful completion candidate appears in the interactive search list , selecting by gesture the partially successful completion candidate from the interactive search list and initiating a further automated search to obtain and display a refined list of completion candidates in the interactive search list for selection or further searching.

87. A method of processing an input string at least partially entered into a personal computing device with a pointing device, the method comprising:

- (a) performing a search of a set of completion candidates to locate a plurality of possible completion candidates for completing the input string in response to a prior located possible completion candidate or a character selectable by a user; and
- (b) displaying at least one of:
 - (i) the plurality of possible completion candidates; and
 - (ii) characters selectable by the user.

88. The method of Claim **87**, further comprising selecting one of the plurality of possible completion candidates for use by an application in response to user input.

89. The method of Claim 88, further comprising displaying on a graphical user interface a total number of completion candidates in a dictionary that begin with the input string.

90. The method of Claim 89, wherein displaying comprises displaying the plurality of possible completion candidates in a search list.

91. The method of Claim 90, further comprising:

- (a) displaying a digital keyboard on a user interface when a user is entering characters a keystroke at a time;
- (b) monitoring the user input;
- (c) if the user input corresponds to activating the search list, replacing the digital keyboard with the search list and waiting for further user input; and
- (d) if the user input corresponds to terminating use of the search list once activated, replacing the search list with the digital keyboard and waiting for further user input.

92. The method of Claim 90, further comprising:

- (a) configuring a digital keyboard to include a plurality of characters assigned to predetermined locations within a layout for the digital keyboard according to a predetermined frequency distribution associated with the plurality of characters, the plurality of characters including less commonly used characters and more commonly used characters based on the predetermined frequency distribution; and
- (b) displaying the digital keyboard on a graphical user interface with the less commonly used characters displayed substantially further from a center of the digital keyboard than the more commonly used characters.